AN EXPERIMENTAL STUDY OF THE SPECIFICITY OF AFFECTIVE RESPONSES

BY

WILLIAM BERKELEY SINGER

B.A., Reed College, 1932
M.A., Reed College, 1934

AN ABSTRACT OF A THESIS

SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR THE DEGREE OF DOCTOR OF PHILOSOPHY IN
PSYCHOLOGY IN THE GRADUATE SCHOOL
OF THE UNIVERSITY OF ILLINOIS, 1938

URBANA, ILLINOIS
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Abstract of Thesis*

Problems

The major problem of the present investigation is directed at the question of whether or not observers are characteristically disposed to be pleased, left indifferent or displeased by any and all stimuli eliciting genuinely affective reactions. If such a constitutional tendency to be readily pleased or displeased exists, it is to be expected that it will be found continuously distributed in a sufficiently large group of observers.

The general plan of the experiment involves the presentation of various affective stimuli to a group of subjects. The intercorrelations of the subjects' ratings of all of the various types of stimuli should throw light on the consistency with which observers exhibit readiness to be pleased or displeased.

Minor problems include the construction of a reliable affective scale, the study of the dependence of affective ratings upon the stimulus-situations, the determination of the reliability of the affective tests employed, and the construction of standard series of stimuli having general affective value.

Materials

The subjects were supplied with specially constructed affective scales and data sheets with which to record their affective ratings of the following kinds of stimuli. The odor series consisted of fourteen odors ranging from pleasant to highly unpleasant: camphor, methyl salicylate, vanillin, p-dichlorobenzene, menthol, phenol, acetophenone, garaniol, ethyl cinnamate, n-caproic acid, quinoline, heptyl aldehyde, o-bro-

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* The complete study is published in *The Journal of General Psychology*, 1941, *24*, 281-341.

motoluene, distilled water. The taste series comprised salt solutions in concentrations of 0, 0.5, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10%, and sugar solutions in concentrations of 1, 3, 5, 7, 9, 11, and 13%. The tone series were pitches of various intensities produced with a beat frequency oscillator and amplifier. Thriteen frequencies, 100, 200, 300, 400, 500, 600, 700, 800, 1000, 1200, 1400, 1600 and 2000 cycles were presented each at five levels of intensity. Five frequencies, 2400, 2800, 3000, 3200, and 4000 cycles were presented at eight intensity levels. The word series consisted of 300 words and phrases denoting foods, occupations, recreations, characteristics of people, institutions, etc. The activities series included thirty simple tasks such as making clay models, solving puzzles, stringing beads, making monograms, etc. Also, moods were rated daily; this gave a series of mood ratings.

Procedure

Thirty-nine college students acted as subjects during an experimental period of approximately one and a half hours, six days a week for three weeks. They employed a nine-point affective scale to record their reactions to repeated group tests with the stimulus-series described above. Including daily mood ratings, the data secured amounted to more than 54,000 affective judgments.

Results and Conclusions

1. The crucial intercorrelations which indicate the existence or non-existence of the tendency to rate affective stimuli consistently are shown below. These correlations were computed from the average ratings of all of the stimuli in each series, computed for each subject.

Intercorrelations Based Upon Total Results

	Odor	Odor-taste	Taste	Word	Tone	Activity
Mood	-.18	.10	.17	.42	.39	.53
Odor		.13	.17	-.02	.03	-.16
Odor-taste			.22	.30	.19	.26
Taste				.28	.29	.34
Word					.13	.35
Tone						.22

The table affords no evidence for the existence of an affective temperament, that is to say, of a consistent degree of readiness to be pleased or displeased by diverse kinds of affective stimuli. None of the coefficients of intercorrelation are sufficiently reliable to permit generalizations about the association of responsiveness to one kind of affective stimulus with responsiveness to any other kind.

2. Although the correlations together are definitely too low to warrant any admission of an affective temperament, a few of the correlations are just possibly significant. These obtained between: mood and activity, mood and word, mood and tone, activity and word.

There is no evidence for a common factor in the simple sensory presentations of the odors, tastes and tones, which are most likely to arouse definite feelings of pleasantness and unpleasantness. But the evidence for a common factor is maximal with moods, activities and words—complex meaningful presentations which are less likely to arouse feelings that may serve as the immediate basis of a rating. In other words, the greater the likelihood of genuine affective arousal the less the evidence for a common factor and conversely.

3. An affective rating-scale was constructed which combines the traditional scale of values and the graphic rating-scale according to the principle of equal-appearing intervals. This scale is superior to the traditional scale of values in that

it exhibits no distortion due to the subjects' preference for particular categories of judgment.

4. Coefficients of reliability based on successive ratings of the same stimulus-situations are high:

Series	r	PEr
Odors	0.90	0.02
Tastes	0.95	0.01
Odors-Tastes	0.89	0.02
Tones	0.96	0.01
Words	0.92	0.02

5. Affective ratings of odors, tastes, tones, activities, words, reveal statistical uniformities which depend upon the physical and psychological characteristics of the situation presented:

(a). Likes and dislikes for chemically pure organic compounds are relatively stable despite widely varying experimental conditions.

(b). Affective ratings of sugar and salt solutions vary in a consistent and uniform manner with change in the concentration. With sugar the higher the concentration, the more frequently is the report of pleasantness. With salt the reverse obtains.

(c). The affective ratings of tastes and odors are moderately stable and not appreciably changed by the alternate presentation of tastes and odors.

(d). In the affective ratings of tones, low pitches are more pleasing than high. Faint tones are more pleasing than loud tones.

(e). Affective ratings of activities actually performed by the subjects can be readily and reliably obtained. The same is true of affective ratings of lists of words and phrases.

(f). Diurnal variations of mood ratings occur but no

consistent trends of any kind are discernable in these ratings.

6. By finding the percentage of pleasantness of stimuli in the various series, translating these percentages into sigma scale values, and then selecting those stimuli located at approximately equal sigma distances apart, standard series of stimuli, having general affective values, were obtained.

VITA

William Berkeley Singer was born in Portland, Oregon, on June 17, 1911. He received his B.A. degree from Reed College in 1932, and, in 1934, an M.A. degree from the same institution. He has been employed as graduate assistant, conducting classes in elementary psychology at Reed College from 1931 to 1934, and at the University of Illinois from 1935 to 1937. Returning to Reed College, he spent the year, 1937-1938, teaching elementary and experimental psychology. He is an associate of the American Psychological Association and a member of the Society of Sigma Xi.